

IN THE CLAIMS

1-3. (canceled).

4. (currently amended) A method for facilitating reconstruction of an image, said method comprising:

estimating a gradient for at least one high-density object using a plurality of reconstructed images separated by a spacing s , wherein each of a plurality of values of the estimated gradient is a function of a plurality of values of the reconstructed images;

generating a gradient image using the estimated gradient, wherein the gradient image represents a variation of the high density object in z ;[[and]]

generating an error-candidate projection using the gradient image, wherein to generate the error-candidate projection, said method further comprises forward projecting the gradient image along β , wherein β represents a projection view angle;

scaling the error-candidate projection with an error fraction c_β , wherein
 $c_\beta = z - \text{int}(z)$, where $z = \frac{(\beta - \beta_c)p}{2\pi} + \frac{M+1}{2}$, wherein β_c represents a center view
angle, p is the pitch, $\text{int}(z)$ represents the integer portion of z , and M represents the
number of rows in a detector array; and

reconstructing an error image using the error-candidate projection.

5. (canceled)

6. (canceled)

7. (previously presented) A method in accordance with Claim 4 wherein estimating a gradient for a high-density object comprises estimating a gradient for a high-density object such that $g(i, j) = d_-(i, j) + d_+(i, j) - 2d(i, j)$, where $g(i, j)$ represents the gradient estimate for the (i, j) pixel and $d_-(i, j)$, $d_+(i, j)$, and $d(i, j)$ are determined according to:

$$d_{-}(i, j) = \begin{cases} f_{-}(i, j) - h, & f_{-}(i, j) \geq h \\ 0 & \text{otherwise} \end{cases}$$

$$d(i, j) = \begin{cases} f(i, j) - h, & f(i, j) \geq h \\ 0 & \text{otherwise} \end{cases}$$

$$d_{+}(i, j) = \begin{cases} f_{+}(i, j) - h, & f_{+}(i, j) \geq h \\ 0 & \text{otherwise} \end{cases}$$

where f , f_{-} , and f_{+} represent three images separated by the spacing s with f being between f_{-} and f_{+} , and h is a pre-determined threshold value.

8. (previously presented) A method in accordance with Claim 4 further comprising helically weighting the error candidate image.

9. (previously presented) A method in accordance with Claim 4 wherein said forward projecting the gradient along β comprises performing at least one of a fan beam forward projection and a parallel beam forward projection.

10. (previously presented) A method in accordance with Claim 4 further comprising producing different gradient images using a segmentation technique.

11. (original) A method in accordance with Claim 10 wherein said producing different gradient images using a segmentation technique comprises:

separating at least two different classes of objects including a first class and a second class;

using a first contrast threshold value for the first class; and

using a second contrast threshold value different from the first contrast threshold value for the second class.

12. (original) A method in accordance with Claim 7 further comprising using more than three adjacent images to produce a gradient image.

13-15. (canceled)

16. (currently amended) A computer programmed to:

estimate a gradient for at least one high-density object using a plurality of reconstructed images separated by a spacing s , wherein each of a plurality of values of the estimated gradient is a function of a plurality of values of the reconstructed images;

generate a gradient image using the estimated gradient, wherein the gradient image represents a variation of the high density object in z ;

generate an error-candidate projection using the gradient image; [[and]]

forward project the gradient image along β , wherein β represents a projection view angle;

scale the error-candidate projection with an error fraction c_β , wherein
 $c_\beta = z - \text{int}(z)$, where $z = \frac{(\beta - \beta_c)p}{2\pi} + \frac{M+1}{2}$, wherein β_c represents a center view
angle, p is the pitch, $\text{int}(z)$ represents the integer portion of z , and M represents the
number of rows in a detector array; and

reconstruct an error image using the error-candidate projection.

17. (canceled)

18. (canceled).

19. (original) A computer in accordance with Claim 17 further programmed to perform at least one of a fan beam forward projection and a parallel beam forward projection.

20. (previously presented) A computer in accordance with Claim 16 further programmed to estimate a gradient for a high-density object such that $g(i, j) = d_-(i, j) + d_+(i, j) - 2d(i, j)$, where $g(i, j)$ represents the gradient estimate for the (i, j) pixel and $d_-(i, j)$, $d_+(i, j)$, and $d(i, j)$ are determined according to:

$$d_-(i, j) = \begin{cases} f_-(i, j) - h, & f_-(i, j) \geq h \\ 0 & \text{otherwise} \end{cases}$$

$$d(i, j) = \begin{cases} f(i, j) - h, & f(i, j) \geq h \\ 0 & \text{otherwise} \end{cases}$$

$$d_+(i, j) = \begin{cases} f_+(i, j) - h, & f_+(i, j) \geq h \\ 0 & \text{otherwise} \end{cases}$$

where f , f_- , and f_+ represent three images separated by the spacing s with f being between f_- and f_+ , and h is a pre-determined threshold value.

21. (previously presented) A computer in accordance with Claim 16 further programmed to:

separate at least two different classes of objects including a first class and a second class;

use a first contrast threshold value for the first class; and

use a second contrast threshold value different from the first contrast threshold value for the second class.

22-24. (canceled).

25. (currently amended) A computed tomographic (CT) imaging system for reconstructing an image of an object, said imaging system comprising:

a detector array;

at least one radiation source; and

a computer coupled to said detector array and said radiation source, said computer configured to:

estimate a gradient for at least one high-density object using a plurality of reconstructed images separated by a spacing s , wherein each of a plurality of values of the estimated gradient is a function of a plurality of values of the reconstructed images;

generate a gradient image using the estimated gradient wherein the gradient image represents a variation of the high density object in z ; [[and]]

generate an error-candidate projection using the gradient image;

scale the error-candidate projection with an error fraction c_β , wherein

$$\underline{c_\beta = z - \text{int}(z), \text{ where } z = \frac{(\beta - \beta_c)p}{2\pi} + \frac{M+1}{2}, \text{ wherein } \beta_c \text{ represents a center view}$$

angle, p is the pitch, int(z) represents the integer portion of z, and M represents the number of rows in a detector array; and

reconstruct an error image using the error-candidate projection.

26. (canceled).